

### Claims

1. A method for producing hydroxylammonium salts by  
5     reacting nitrous oxide (NO) with a molar hydrogen  
      surplus in an aqueous medium of strong mineral acids  
      in the presence of a noble metal catalyst suspended on  
      a carbon-based support at excess pressure up to 10 bar  
      and temperatures up to 80°C, the hydroxylammonium salt  
10     being constantly removed from the reaction vessel,  
      said vessel being a stirred reactor with an agitator  
      shaft and agitator blades attached to it via a hub and  
      bearing surface or support, characterized in that
  - a gas inlet and distribution system is provided in the  
15     lower part of the stirred reactor,
  - a disk agitator is placed immediately above, the hub  
      with bearing surface or support of which comprising  
      angled, concave and tilted agitator blades that rotate  
      their angled or concave sides in the direction of  
20     motion, and
  - a two-blade blade agitator is provided on the agitator  
      shaft in the upper part of the stirred reactor, its  
      individual leaves being offset like lamellas at an  
      angle of 0 to 30°C to the blade axis so that they  
25     constantly wet the reactor cap when rotating.
2. The method according to claim 1 wherein sulfuric acid  
      at a 4 to 5-normal concentration is used as the strong  
      mineral acid and the product is hydroxylammonium  
30     sulfate.
3. The method for producing hydroxylammonium salts  
      according to claims 1 or 2 wherein hydrogen and NO are  
      used at a molar ratio of 1.9 to 2.0 : 1.0.  
35
4. The method for producing hydroxylammonium salts  
      according to one or several of claims 1 to 3 wherein

the suspended catalyst (including its support) is used in a liquid suspension at 7 to 50 g/l and a mean diameter of 30 to 80  $\mu\text{m}$ .

- 5      5. The method for producing hydroxylammonium salts according to one or several of claims 1 to 4 wherein platinum is used as a noble metal catalyst at a concentration of 0.1 to 0.5 percent by weight in relation to its carbon support.
- 10
6. The method for producing hydroxylammonium salts according to one or several of claims 1 to 5 wherein the gases escape from an annular gas inlet and distribution system with an average gas bubble diameter of 5 mm to 6 mm and a gas speed of 7 to 15 m/sec.
7. The method for producing hydroxylammonium salts according to one or several of claims 1 to 6 wherein 20 concave agitator blades are attached to the rotating hub of the disk agitator.
8. The method for producing hydroxylammonium salts according to one or several of claims 1 to 7 wherein 25 wall baffles are arranged in the stirred reactor.
9. The method for producing hydroxylammonium salts according to one or several of claims 1 to 8 wherein the two-blade blade agitator in the top portion of the stirred reactor is placed at an angle of incidence of 30  $45^\circ$  to  $90^\circ$  in relation to the liquid level in the reactor, wherein it consists of offset individual lamella-like leaves, and wherein it has an agitator diameter of 0.3 to 0.4 relative to the reactor 35 diameter.

10. The method for producing hydroxylammonium salts according to one or several of claims 1 to 9 wherein the blade height of the individual leaves of the blade agitator is 0.2 to 0.5 relative to the blade agitator diameter.
- 5
11. The method for producing hydroxylammonium salts according to one or several of claims 1 to 10 wherein the disk agitator in the bottom portion of the reactor is operated at a peripheral speed of 5 to 15 m/sec.
- 10